

Message Text

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INFO AMCONSUL MONTREAL

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UNCLAS SECTION 01 OF 05 OTTAWA 00843

DEPARTMENT FOR EUR/CAN - JOHN ROUSE

DOE/FERC FOR COMMISSIONER SMITH AND JOHN ADGER

DOE FOR LES GOLDMAN AND ASSISTANT SECRETARY BERGOLD

E.O.11652: N/A

TAGS: ENRG, PGOV, SENV, CA

SUBJECT: NORTHERN GAS PIPELINE: NATIONAL ENERGY BOARD (NEB)
RECOMMENDATION ON PIPE SIZE AND PRESSURE

1. FOLLOWING IS SUMMARY, INCLUDING VERBATIM EXCERPTS, OF
NEB REPORT REGARDING SELECTION OF PIPE FOR LARGE CAPACITY
SEGMENT OF THE ALASKA HIGHWAY GAS PIPELINE. REPORT WILL BE
TABLED AND SPOKEN TO BY ENERGY MINES AND RESOURCES MINISTER
ALASTAIR GILLESPIE IN HOUSE OF COMMONS TODAY (FEBRUARY 20)
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AT 3:00 P.M.

2. BEGIN SUMMARY:

--- A. BACKGROUND: REPORT DESCRIBES FORMATION AND TWO SUB-
SEQUENT MEETINGS OF TECHNICAL STUDY GROUP TO "EXAMINE PIPE-
LINE SIZES AND OPERATING PRESSURES IN ADDITION TO THOSE

PROPOSED BY THE FOOTHILLS GROUP" UNDER PROVISIONS OF PARAGRAPH 10 OF SEPTEMBER 20 CANADA-U.S. PIPELINE AGREEMENT. BACKGROUND SEGMENT CONCLUDES:

-----QUOTE AT THE CONCLUSION OF THE SECOND MEETING, U.S. GOVERNMENT OFFICIALS EXPRESSED A LACK OF CONFIDENCE IN CERTAIN OF THE COST ESTIMATES PRESENTED BY FOOTHILLS AND SUGGESTED THAT AN INDEPENDENT STUDY BE SPONSORED BY THE TWO GOVERNMENTS. AFTER CONSULTATION WITH MINISTERS, CANADIAN OFFICIALS DECLINED TO PARTICIPATE IN THE SPONSORSHIP OF A JOINT STUDY, BUT INDICATED THAT SOME ADDITIONAL TIME WOULD BE ALLOWED TO PERMIT U.S. OFFICIALS TO STUDY THE MATTER FURTHER. IN VIEW OF THE NEED FOR AN EARLY DECISION EXPRESSED BY FOOTHILLS, IT WAS REQUESTED THAT A RESPONSE BE RECEIVED FROM THE UNITED STATES BY 8 FEBRUARY 1978 TO ALLOW A DECISION ON THE PIPE SPECIFICATIONS TO BE MADE BY MID FEBRUARY. UNQUOTE

--- B. UNITED STATES RESPONSE: REPORT ACCURATELY DESCRIBES RATIONALE AND ASSUMPTIONS FOR U.S. ANALYSIS OF ALTERNATIVE PIPE SIZES AND PRESSURES. IT CONCLUDES:

----- QUOTE THE GENERAL CONCLUSIONS OF THE UNITED STATES ANALYSIS WERE THAT AT HIGH FLOW VOLUMES (3.6 TO 4.5 BCF PER DAY) AND AN ASSUMPTION OF HIGH FUEL PRICES, THE 48-INCH 1680 PSI SYSTEM IS SUPERIOR IN TERMS OF COST OF SERVICE, UNCLASSIFIED

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WITH THE 56-INCH 1080 PSI SYSTEM NEARLY AS GOOD, AND THE 54-INCH 1120 PSI SYSTEM SOMEWHAT MORE COSTLY. THE 48-INCH 1260 PSI SYSTEM WOULD NOT BE CONSIDERED UNDER THESE CONDITIONS. THE ANALYSIS CONCLUDED THAT IF THERE WERE AN EXTENDED DELAY IN ATTACHING FLOWS OF GAS FROM THE MACKENZIE DELTA, THEN THE ECONOMIC CHOICE WOULD BE A 48-INCH 1260 PSI SYSTEM.

----- WHILE THE BOARD MIGHT NOT AGREE WITH SOME OF THE ASSUMPTIONS USED IN THE UNITED STATES ANALYSIS, IT DOES NOT DISAGREE WITH THE GENERAL CONCLUSIONS REACHED. UNQUOTE

--- C. NATIONAL ENERGY BOARD CONCLUSIONS:

----- QUOTE SAFETY AND RELIABILITY OF A PIPELINE ARE MATTERS OF PRIMARY CONCERN TO THE BOARD. THERE HAS BEEN A GOOD RECORD IN THE CANADIAN PIPELINE INDUSTRY IN THIS REGARD AND THERE HAS BEEN STEADY IMPROVEMENT IN STANDARDS RELATED TO QUALITY OF STEEL, MANUFACTURING PROCEDURES, PIPE WELDING AND OTHER CONSTRUCTION PROCEDURES.

----- THE BOARD BELIEVES THAT MOVING FROM THE GENERAL

OPERATING PRESSURE RANGE OF 1000 PSI, WHICH IS THE PRESENT PRACTICE IN NORTH AMERICA, TO THAT PROPOSED FOR THE 48-INCH 1680 PSI SYSTEM, REPRESENTS A LARGE STEP INTO NEW TECHNOLOGY. THE BOARD WOULD REQUIRE THOROUGH TESTING OF THE 48-INCH, 0.72-INCH WALL THICKNESS PIPE, INCLUDING THE USE OF CRACK ARRESTORS FOR THE PREVENTION OF PROPAGATION OF DUCTILE FRACTURES, BEFORE APPROVING THAT DESIGN. FOOTHILLS HAS ESTIMATED THAT THERE COULD BE A DELAY OF UP TO TWO YEARS IN COMPLETION OF THE PIPELINE IN ORDER TO CARRY OUT SUCH TESTING BEFORE ORDERING PIPE. THIS WOULD NEITHER BE IN THE INTERESTS OF THE UNITED STATES NOR OF CANADA.

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----- ON THE OTHER HAND, THE BOARD IS PREPARED TO APPROVE THE USE OF 0.54-INCH WALL THICKNESS PIPE OF THE SPECIFICATIONS PROPOSED BY FOOTHILLS IN 48-INCH, 54-INCH OR 56-INCH DIAMETERS, SUBJECT ONLY TO CONFIRMATORY BURST TESTING PRIOR TO COMMENCEMENT OF CONSTRUCTION. THIS MEANS THAT, FROM A DESIGN POINT OF VIEW, THERE WOULD BE NO DELAY IN ORDERING PIPE, AND THAT PLANNING FOR ALL OTHER ASPECTS OF THE PIPELINE SYSTEM COULD PROCEED IN A MORE ORDERLY WAY.

----- AN IMPORTANT FEATURE, ALSO, IN THE SELECTION OF

0.54-INCH WALL THICKNESS PIPE, IS THE FACT THAT TWO CANADIAN PIPE MILLS COULD SUPPLY PIPE OF THE QUALITY REQUIRED AND IN DIAMETERS UP TO 56 INCHES. IN THE CASE OF THE HEAVIER WALL PIPE ONLY ONE CANADIAN MILL HAS THE MANUFACTURING CAPABILITY, THUS REDUCING RELIABILITY AND POSSIBLY AFFECTING CANADIAN CONTENT. FURTHERMORE, THERE APPEARS TO BE ONLY ONE UNITED UNCLASSIFIED

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STATES COMPANY CAPABLE OF MAKING THE HIGH PRESSURE PIPE.

----- INsofar AS THE AVAILABILITY OF COMPONENT PARTS OF THE PIPELINE SYSTEM OR THE AVAILABILITY OF PIPE LAYING EQUIPMENT IS CONCERNED, IT IS NOT ANTICIPATED THAT THE CHOICE OF DIAMETER IN THE LOWER PRESSURE RANGE WILL BE SIGNIFICANT FROM THE POINT OF VIEW OF AVAILABILITY. THE CHOICE OF 54-INCH OR 56-INCH DIAMETER SYSTEMS OVER 48-INCH MIGHT RESULT IN MINOR DIMINUTION OF CANADIAN CONTENT OF COMPONENT PARTS. TO SOME EXTENT THIS WILL DEPEND ON THE LEAD TIME AVAILABLE FOR CANADIAN MANUFACTURERS TO RESPOND TO BUSINESS OPPORTUNITIES.

----- HAVING CONCLUDED THAT FROM A SAFETY AND RELIABILITY POINT OF VIEW THE CHOICE OF PIPE MUST BE RESTRICTED TO THE PRESSURE RANGE ACHIEVABLE WITH 0.54-INCH WALL THICKNESS PIPE (48-INCH 1260 PSI, 54-INCH 1120 PSI, 56-INCH 1080 PSI), THE DECISION RESTS LARGELY IN THE FIELD OF ECONOMICS.

----- AS INDICATED IN THE UNITED STATES RESPONSE, A KEY FACTOR IS THE TIMING OF THE CONNECTION OF THE MACKENZIE DELTA RESERVES. WITH THIS IN MIND THE BOARD HAS REVIEWED ITS CONCLUSION CONTAINED IN THE REASONS FOR DECISION, NORTHERN PIPELINES, THAT THERE WAS A NEED TO SUPPLEMENT EXISTING RESERVES OF GAS FROM WESTERN CANADA SOMETIME UNCLASSIFIED

BETWEEN 1982 AND 1985. WHILE RECOGNIZING THAT THERE HAS BEEN CONTINUING EXPLORATION SUCCESS IN THE WESTERN CANADIAN SEDIMENTARY BASIN SINCE THE TIME OF THE BOARD'S REPORT, IT IS THE BOARD'S EXPECTATION THAT A DETAILED REVIEW OF GAS SUPPLY AND DEMAND IN CANADA, WHICH WILL UNDOUBTEDLY BE UNDERTAKEN WITHIN THE NEXT YEAR, WILL STILL INDICATE A NEED UNCLASSIFIED

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FOR THE DEMPSTER LATERAL PRIOR TO 1990. IN THE BOARD'S VIEW, THIS RESTRICTS THE CHOICE ON ECONOMIC GROUNDS TO ONE BETWEEN 54-INCH AND 56-INCH DIAMETER PIPE SINCE THESE DIAMETERS ARE

THE EFFICIENT ONES FOR A THROUGHPUT OF 3.6 BCF PER DAY (2.4
FROM ALASKA AND 1.2 FROM THE DELTA) AS CONTEMPLATED IN PARA-
GRAPH 3(A) OF THE CANADA - U.S. AGREEMENT.

----- THE FOLLOWING ARE THE RELEVANT ECONOMIC FACTORS FOR
CONSIDERATION:

-----WHITEHORSE TO CAROLINE SEGMENT

------(CAPACITY 3.6 PCF PER DAY)

48-IN.

1260 PSI 48-IN. 54-IN. 56-IN.

UNIT LOOPED 1680 PSI 1120 PSI 1080 PSI

ESTIMATED CAPITAL COST OF
FOOTHILLS PIPELINE IN CANADA
(ON BASIS OF FILED COSTS IN AGREEMENT)

INITIAL CAPACITY FOR 2.4 BCF/DAY:

DOLS

MM 3,873 4,418 4,234 4,413

INCREMENT FOR 1.2 BCF/DAY:

DOLS

MM 1,670 470 586 409

TOTAL FOR 3.6 BCF/DAY:

DOLS

MM 5,543 4,888 4,820 4,822

ESTIMATED FUEL CONSUMPTION:

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INFO AMCONSUL MONTREAL

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PERCENT 6.8 7.3 8.0 7.7

ESTIMATED DIFFERENCE IN 20-YEAR AVERAGE COST
OF SERVICE IN CANADA FROM 56-INCH CASE

(A) FUEL VALUED AT DOLS 1.00/MMBTU'S:
CENTS/
MMBTU'S PLUS 2.2 MINUS 0.4 PLUS 0.3

(B) FUEL VALUED AT DOLS 1.60/MMBTU'S:

CENTS/ PLUS 3.7 MINUS 0.5 PLUS 0.5
MMBTU'S

(ALL COSTS EXPRESSED IN 1975 DOLLARS AND DERIVED
FROM U.S. TECHNICAL STUDY)
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48-IN.
1260 PSI 48-IN. 54-IN. 56-IN.
UNIT LOOPED 1680 PSI 1120 PSI 1080 PSI

ESTIMATED DIFFERENCE IN COST OF SERVICE IN CANADA
FROM 56-INCH CASE IN 1985 IN ACTUAL DOLLARS:

(A) FUEL VALUED AT DOLS 1.63/MMBTU'S (DOL 1.00 IN 1975 DOLS):

CENTS/ PLUS 6 MINUS 1 PLUS 2 --
MMBTU'S

(B) FUEL VALUED AT DOLS 2.61/MMBTU'S (DOL 1.60 IN 1975 DOLS):

CENTS/
MMBTU'S PLUS 7 MINUS 2 PLUS 3 --

(ALL COSTS ON BASIS USED IN UNITED STATES/CANADA NEGOTIA-
TIONS)

NOTE THE COST OF SERVICE IN 1985 FROM PRUDHOE BAY TO U.S.
MARKETS IS ABOUT DOLS 2.10 AND FROM DELTA TO EMPRESS IS
ABOUT DOLS 1.50. THE DIFFERENCE IN COST OF SERVICE IN USING

THE 56-INCH LOW PRESSURE PIPE COMPARED WITH 48-INCH HIGH PRESSURE PIPE IS 1 PERCENT OR LESS.

----- THE BOARD CONCLUDES THAT THE INCREMENTAL SAVINGS IN COST OF SERVICE FOR BOTH UNITED STATES AND CANADIAN CONSUMERS OVER THE LIFE OF THE PIPELINE IN USING 56 INCH DIAMETER INSTEAD OF 54-INCH IS SUFFICIENT TO INDICATE A PREFERENCE FOR THE 56-INCH DIAMETER PIPE. THIS CHOICE IS REINFORCED FROM A UNITED STATES' VIEWPOINT BECAUSE OF THE GREATER FUEL EFFICIENCY AND THEREFORE IN THE GREATER NUMBER

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OF BTU'S DELIVERED.

----- WHILE THE FOOTHILLS COMPANIES HAD APPLIED FOR A 48-INCH 1260 PSI PIPELINE, WITH LOOPING AS REQUIRED, THEY AGREED AT THE TIME OF THE CANADA-UNITED STATES NEGOTIATIONS THAT CONSIDERATION SHOULD BE GIVEN TO A LARGER CAPACITY SYSTEM BETWEEN WHITEHORSE AND CAROLINE. FOOTHILLS (YUKON) HAS SUBSEQUENTLY ADVISED THE BOARD THAT IT HAS NO PREFERENCE BETWEEN 54-INCH AND 56-INCH DIAMETER PIPE.

-- ---- THE UNITED STATES HAD RECOGNIZED IN THE CANADA-UNITED STATES AGREEMENT THE ADVANTAGES TO CANADA OF INITIALLY INSTALLING AN ECONOMICALLY EFFICIENT PIPELINE TO CARRY UP TO 3.6 BCF PER DAY SO AS TO FACILITATE THE CONNECTION OF DELTA GAS TO MARKETS. WHILE THE UNITED STATES RESPONSE INDICATED THAT BASED ON THE DESIGN VOLUMES OF 2.4 BCF PER DAY FROM PRUDHOE BAY AND 1.2 BCF PER DAY FROM THE MACKENZIE DELTA, ITS PREFERENCE IS FOR 48-INCH 1680 PSI PIPE, ITS SECOND CHOICE IS FOR 56-INCH 1080 PSI PIPE. THE UNITED STATES PREFERS 56-INCH DIAMETER TO 54-INCH BECAUSE OF GREATER FUEL EFFICIENCY.

----- THERE IS ONE OTHER CONSIDERATION IN THE CHOICE. PARAGRAPH 10 OF THE CANADA-UNITED STATES AGREEMENT DATED 20 SEPTEMBER 1977 MADE PROVISION FOR CONSIDERATION OF ANY COMBINATION OF PRESSURE AND DIAMETER OF PIPE WHICH WOULD ACHIEVE SAFETY, RELIABILITY AND ECONOMIC EFFICIENCY. HOWEVER, ANNEX III TO THE AGREEMENT RELATING TO COST ALLOCATION, CONTAINED COST ESTIMATES FOR 48-INCH AND 54-INCH DIAMETER PIPES ONLY. IF 56-INCH DIAMETER PIPE WERE CHOSEN, IT WOULD REQUIRE AN ADDENDUM TO ANNEX III TO INCLUDE COSTS FOR THE 56-INCH ALTERNATIVE WHICH HAD BEEN AGREED UPON BY THE TWO COUNTRIES.

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----- INASMUCH AS THE CANADA-UNITED STATES AGREEMENT IS
INCLUDED AS SCHEDULE I TO BILL C-25, THERE WOULD HAVE TO BE
A CORRESPONDING AMENDMENT TO THE BILL NOW BEFORE THE HOUSE.

----- THE BOARD UNDERSTANDS THAT THE INCLUSION OF APPRO-
PRIATE COST FIGURES FOR 56-INCH PIPE IN ANNEX III TO THE
AGREEMENT WOULD BE CONSIDERED A TECHNICAL CHANGE. IT PRE-
SUMABLY WOULD REQUIRE A MEETING OF CANADIAN AND UNITED
STATES OFFICIALS TO AGREE UPON THE DETERMINATION OF THE
FIGURES AND THIS COULD BE UNDERTAKEN VERY SHORTLY.

----- UNTIL THE NORTHERN PIPELINE ACT BECOMES LAW, THERE
ARE NO CERTIFICATES IN FORCE, AND WITH RESPECT TO THE PIPE-
LINE SYSTEM IN QUESTION THERE IS NO DECISION-MAKING AUTHOR-
ITY TO APPROVE THE PIPELINE SPECIFICATIONS. SECTION 18 OF
THE CERTIFICATE TERMS AND CONDITIONS CONTAINED IN SCHEDULE
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III TO THE ACT PROVIDES THAT THE SPECIFICATIONS SHALL BE
THOSE APPROVED BY THE MINISTER AND BOARD.

----- BY MEANS OF THIS REPORT, THE BOARD IS INDICATING ITS
INTENTION TO INCLUDE IN ITS APPROVAL OF PIPELINE SPECIFICA-

TIONS SUBSEQUENT TO THE ENACTMENT OF BILL C-25, APPROVAL OF 56-INCH, 0.54-INCH WALL THICKNESS GRADE 70 PIPE WITH A MAXIMUM ALLOWABLE OPERATING PRESSURE OF 1080 PSI FOR THAT PORTION OF THE PIPELINE SYSTEM BETWEEN WHITEHORSE, YUKON AND CAROLINE, ALBERTA. UNQUOTE

--- D. APPENDIX I: TECHNICAL REVIEW

QUOTE

1.0 INTRODUCTION

----THE UNITED STATES REPORT ("U.S. GOVERNMENT SAFETY AND RELIABILITY EVALUATION OF DIFFERENT SIZE AND PRESSURE COMBINATIONS FOR ALASKA GAS PIPELINE") CONCLUDES THAT BOTH THE HIGH-PRESSURE SYSTEM AND THE LOW-PRESSURE SYSTEMS CAN BE BUILT AND OPERATED SAFELY AND RELIABLY. HOWEVER, IT DID CONCLUDE THAT TESTING MORE THAN ONE ALTERNATIVE WOULD DELAY COMPLETION OF CONSTRUCTION, PERHAPS AS LONG AS TWO YEARS.

----THE NATIONAL ENERGY BOARD AGREES WITH MUCH OF THE SUPPORTING INFORMATION CONTAINED IN THE UNITED STATES EVALUATION BUT DOES NOT AGREE WITH THE CONCLUSIONS DERIVED THEREFROM.

2.0 TECHNICAL CONSIDERATIONS

---2.1 BURST TESTS

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----(THIS SECTION REPEATS EARLIER STATEMENT THAT 48-INCH/ 1680 PSI TECHNOLOGY WOULD REQUIRE FULL SCALE TESTING AND THUS PROBABLY DELAY CONSTRUCTION)

---2.2 FRACTURE CONTROL

----THE ABILITY TO CONTROL EITHER FRACTURE INITIATION OR PROPAGATION THROUGH PIPE TOUGHNESS IS INHERENTLY LESS FOR THE 48-INCH HIGH-PRESSURE DESIGN. SUCH A DESIGN WILL LIKELY REQUIRE THE DEVELOPMENT OF A CRACK ARRESTOR SYSTEM THAT DOES NOT COMPROMISE ESTABLISHED DESIGN CONSTRAINTS AND ACTS EFFECTIVELY. NO SUCH DESIGN HAS BEEN PROVEN IN THE FIELD. THE NET RESULT OF THESE FACTORS SUGGESTS A RISK OF DECREASED SYSTEM RELIABILITY RELATIVE TO MORE CONVENTIONAL PRESSURES AND WALL THICKNESSES.

---2.3 CONSTRUCTION WELDING

----THE UNITED STATES STATEMENT REGARDING THE DEVELOPMENT, QUALIFICATION AND STRICT ADHERENCE TO FIELD WELDING PRO-

CEDURES IS FULLY SUPPORTED. HOWEVER, THE UNITED STATES VIEW THAT THE POTENTIAL FOR REALIZING THESE OBJECTIVES IS EQUAL FOR ALL DESIGNS IS NOT ACCEPTED. THE FIELD WELDING OF A 48-INCH HIGH-PRESSURE SYSTEM IS MORE DIFFICULT DUE TO THE USE OF HEAVIER (0.72-INCH) WALL THICKNESS. ON THE

BASIS OF DIRECT EXPERIENCE WITH 0.54-INCH PIPE, TRIAL WORK ON 0.72-INCH PIPE AND ANALYTICAL EVALUATION OF ROOT BEAD WELD STRESSES, IT IS RECOGNIZED THAT THE IMPLEMENTATION AND ENFORCEMENT OF THE COMPLEX WELDING PROCEDURES REQUIRED FOR THE 48-INCH 0.72-INCH PIPE IS CRITICAL. THE ABILITY TO

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EXECUTE SUCH A PROCEDURE RELIABLY FROM AN ECONOMIC AND TECHNICAL POINT OF VIEW, HAS NOT BEEN ESTABLISHED. UNTIL SUFFICIENT FIELD WELDING TESTS AND PRODUCTION TRIALS ARE DONE TO ESTABLISH SUITABLE PROCEDURES AND THE MANPOWER AND EQUIPMENT REQUIREMENTS TO ACHIEVE PROGRESS RATES COMPATIBLE WITH OTHER CREWS, THE NATIONAL ENERGY BOARD FEELS THE PRESENT COST COMPARISONS BASED ON NORMAL PROCEDURES MAY NOT BE VALID.

---2.4 AVAILABILITY OF MATERIALS

----(THIS PARAGRAPH REPEATS PREVIOUS COMMENTS ABOUT RESPECTIVE CAPACITIES OF U.S. AND CANADIAN MILLS TO PRODUCE ALTERNATIVE PIPE SIZES AND WALL THICKNESSES.)

---3.0 CONCLUSION
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----THE NATIONAL ENERGY BOARD HAS CONCLUDED THAT THE OPERATING RELIABILITY AND SAFETY OF ANY OF THE LOW-PRESSURE ALTERNATIVES WOULD BE HIGH DUE TO THE DESIGN PARAMETERS AND MATERIAL SELECTION USED AND DUE TO RECENT CANADIAN EXPERIENCE WITH PIPE OF SIMILAR SPECIFICATIONS. THE NATIONAL ENERGY BOARD IS PREPARED TO AUTHORIZE THE USE OF LOW-PRESSURE LARGE-DIAMETER PIPE WITH CONFIRMATORY BURST TESTING PRIOR TO COMMENCEMENT OF CONSTRUCTION.

----THE NATIONAL ENERGY BOARD WOULD NOT BE PREPARED TO CONSIDER THE USE OF 48-INCH 1680 PSI PIPE UNTIL SATISFACTORY BURST TESTS HAD PROVEN THE VIABILITY OF THE DESIGN UNDER THE OPERATING CONDITIONS ANTICIPATED.

----SUFFICIENT CAPACITY EXISTS IN NORTH AMERICA TO MEET THE LOW PRESSURE PIPE REQUIREMENTS OF THE PROJECT WITHIN THE PROJECTED CONSTRUCTION SCHEDULE. THE SELECTION OF 48- INCH HIGH-PRESSURE PIPE INHERENTLY WOULD INVOLVE SIGNIFICANTLY HIGHER RISKS OF COST OVERRUN AND COMPLETION DELAYS RESULTING FROM WELD QUALITY AND OTHER PROBLEMS RELATED TO THE 0.72-INCH WALL-THICKNESS PIPE. FROM THE POINT OF VIEW OF SAFETY, RELIABILITY, MATERIAL SUPPLY AND MAINTENANCE OF CONSTRUCTION SCHEDULE, THE SELECTION OF PIPE SPECIFICATIONS FOR THE PIPELINE BETWEEN WHITEHORSE AND CAROLINE SHOULD BE RESTRICTED TO THE LOW-PRESSURE OPTIONS INVOLVING 0.54-INCH WALL-THICKNESS PIPE. UNQUOTE
END SUMMARY. ENDERS

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Review Media Identifier:
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Review Release Event: n/a
Review Transfer Date:
Review Withdrawn Fields: n/a
SAS ID: 3542516
Secure: OPEN
Status: NATIVE
Subject: NORTHERN GAS PIPELINE: NATIONAL ENERGY BOARD (NEB) RECOMMENDATION ON PIPE SIZE AND PRESSURE
TAGS: ENRG, PGOV, SENV, CA
To: STATE
Type: TE
vdkgvwkey: odbc://SAS/SAS.dbo.SAS_Docs/661361d3-c288-dd11-92da-001cc4696bcc
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